



Project Manager Brigade Combat Team



2001 Munitions Executive Summit & APBI

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Vanguard For Army Transformation





Outline



- Mission and Background
- TOW Bunker Buster
- Service and Training Rounds
- Training Concerns
- Summary





Project Manager Brigade Combat Team



Mission Statement

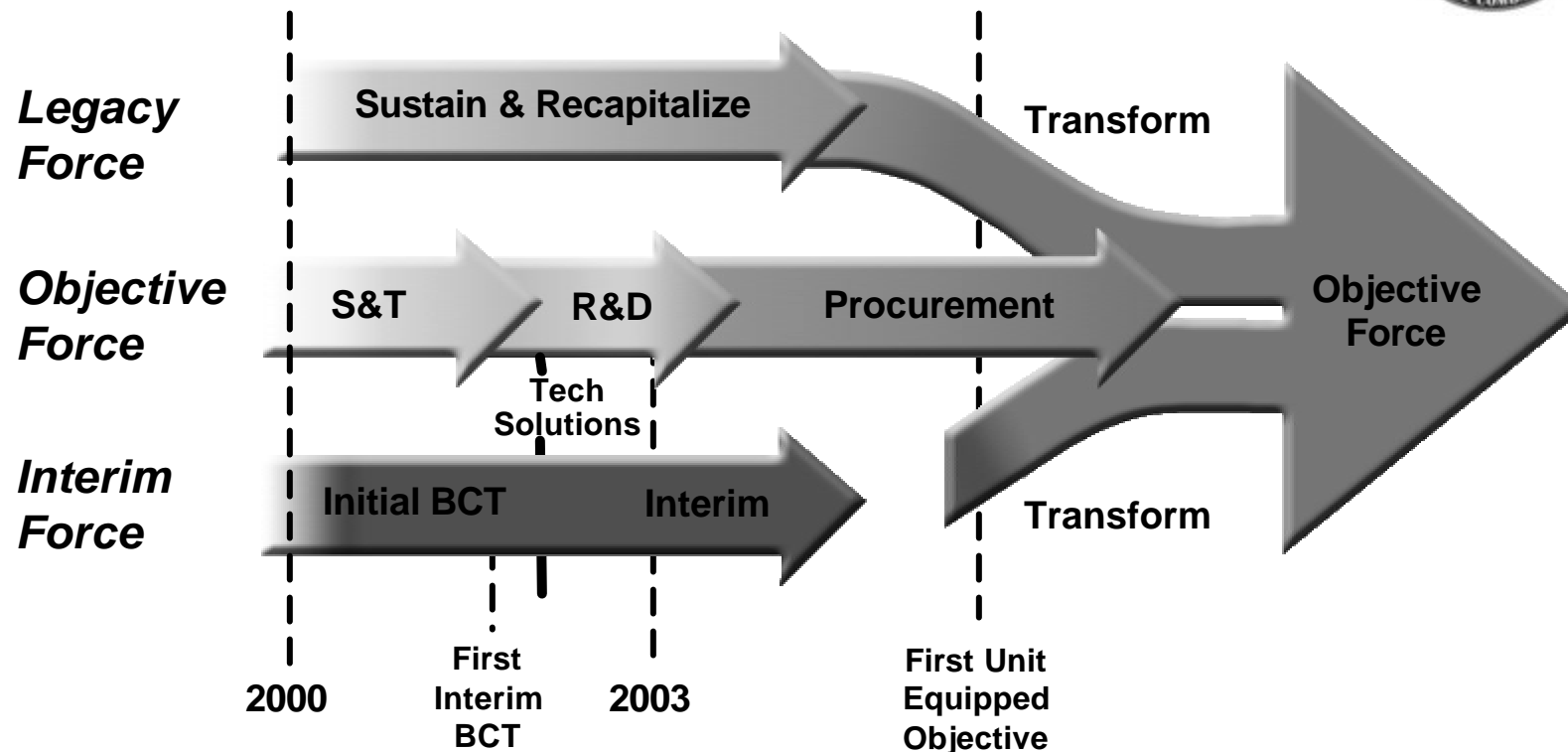
**Develop, Produce, Field and Sustain
The Full Range of
Safe, Reliable, Supportable and Effective Systems
Envisioned by the Brigade Combat Team
Organizational and Operational Concept for
Initial and Interim Brigades
While Developing the Acquisition and
Program Management
Framework to Transform the Army To the
Objective Force.**

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The Army Transformation



... Responsive, Deployable, Agile, Versatile,
Lethal, Survivable, Sustainable

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IAV Common & Integrated Capabilities



Commonality

- Interoperable with ABCS (KPP)
- C-130 Transportable (KPP)
- IAV Maximum Commonality at System, Subsystem, TMDE, Parts, Tools, Skills And Tasks

Infantry Carrier Vehicle

- Transports 9-man Infantry Squad + 2-man Crew (KPP)

Commander's Vehicle

- Provides Commander's C2 Connectivity

ATGM Vehicle

- TOW 2B Anti-Tank Capability Under Armor

Reconnaissance Vehicle

- LRAS3 Target Acquisition
- Surveillance for the BDE

Mortar Carrier

- Dismounted M121 120mm MRT Initially
- Soltam 120mm Recoil MRT Block Mod

NBC Reconnaissance Vehicle

- Detection of NBC Hazards

Fire Support Vehicle

- Striker - Coordinated Fire Support Planning and Execution

Medical Evacuation Vehicle

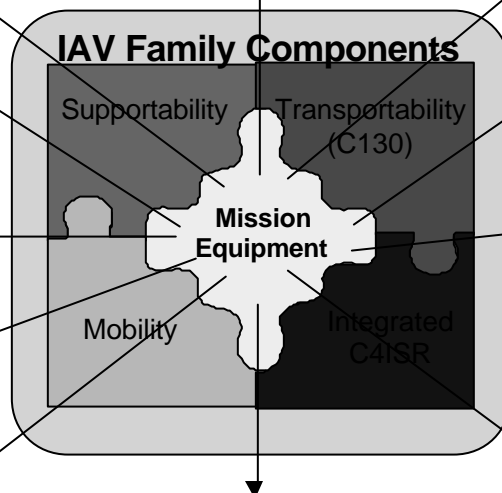
- 4 Litter Evacuation Capability

Engineer Squad Vehicle

- Transports Engineer Squad & Equipment + 2-man Crew
- Mine Neutralization Kit

Mobile Gun System

- Bunker Busting Capability (KPP)
- Penetrate Reinforced Concrete Wall to Allow Infantry Access
- Provides Direct Fire Support to Dismounted Infantry



Bottom Line: *Mission Equipment Packages Make The Variants Unique*

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MGS Bunker Buster Requirements



Breach a Masonry Wall

- 8" Double Reinforced Concrete Wall
- Provide a Hole for Infantry Assaults



Defeat a Bunker

- Soviet Engineered Earth & Timber Bunker
- Provide a Structural Overmatch

**This is the Key Performance Parameter for the MGS
-Supports the Infantry in the Assault-**

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TOW Bunker Buster



Complete Development of Safe & Effective Missile Within 12 Months

- Uses Existing Flight Algorithms for TOW Missile
- Maintain TOW Accuracy and Range
- 50 Missiles For Qualification Testing
- 50 Missiles Available for Additional Testing
- Use Existing Mechanical Safe and Arm Device
- Minimal Insensitive Munitions Testing and/or Insensitive Munitions Waiver Required
- Conduct User Test
- Do Not Increase Logistical Support Structure Requirements
- Make it Simple to Use

Retrofit & Field 500 Modified TOW 2A Missiles Within 4 Months of MDA Decision

Arming the ATGM for an MGS ILO Role

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MGS Ammo Priorities



MGS #1 Ammo Priority is:

- High Explosive Plastic (HEP) (or Similar)

Then:

- Anti-personnel (APERS)
- High Explosive Anti Tank (HEAT)
- Kinetic Energy (SABOT/APFSDS)

The PM Approach ...

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MGS Ammo Development

Focus Development on:

- 105 HEP Re-procurement
 - TMAS Has Submitted an UFR
 - Review and Update of TDP
 - Replace Single Safety Fuse With Dual Safety Fuse
 - Produce Rounds (Both Training and Service)

With Possible Extension to:

- 105 Anti-personnel round
 - Canister or APERS-T?
 - Fort Knox Developing an ORD
 - TMAS Has Submitted a UFR

For the Others ...

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MGS 105mm Ammo Assessment Plan



***Assess Current HEAT and KE Stockpiles (Training and Service)
with Support of DCSLOG/DCS AMMO***

Objectives:

- Phase 1.
 - Determine If Stockpile Meets Original Reqmt's
 - Determine If Stockpile Will Support MGS Development, Testing, Initial Fieldings
- Phase 2.
 - Determine If Stockpile Will Survive Until 2015
 - Determine If Stockpile Items Are Candidates for LCCM or Upgrades

Limitations:

- Not Realistic to Assess/Test Now For (Will Be Assessed During MGSEMD):
 - Autoloader Compatibility
 - Bustle Rack Compatibility (Undefined Rough-handling Reqmt's)
 - Fratricide & Impact Survivability.
 - Ballistic Solutions for MGS Gun System
 - APERS M494 Not Compatible With An Autoloader (Settable Fuse)



IAV Ammo Requirements



- The Current STRAC and Stockpile Should Support the Following IAVs and Their Weapons Systems:
 - The M2 cal .50 and MK19 40mm Machine Guns on ICV, MC, RV, FSV, ESV, CV, & NBCRV
 - The TOW IIB and the 7.62mm Machine Guns on ATGM
 - 60mm, 81mm and 120mm Mortars on MC



IAV Training Concerns



- M1/M1A1/M1A2 STRAC Is Not Suitable for MGS Units:
 - Tank Killing vs. Bunker Busting
 - Independent Maneuver vs. Infantry Support
 - KE Rounds vs. HEP Rounds
- Current STRAC Does Not Support M6 Smoke Grenade Discharger Training:
 - 12 Launchers With 4 66mm Tubes on Each IAV.
 - Provides:
 - 360° Obscuration.
 - Enhanced Survivability & Mobility.
- M2 and MK19 Mix

The user community is currently developing training strategies, ammunition requirements, and a weapons system mix for IAVs.



Summary



The program management, ammunition, and user communities are working together to identify and resolve concerns before they become problems.

Together we'll provide the soldier with the weapon systems and ammunition needed to achieve the Chief's transformation goals.



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PM BCT



Backup

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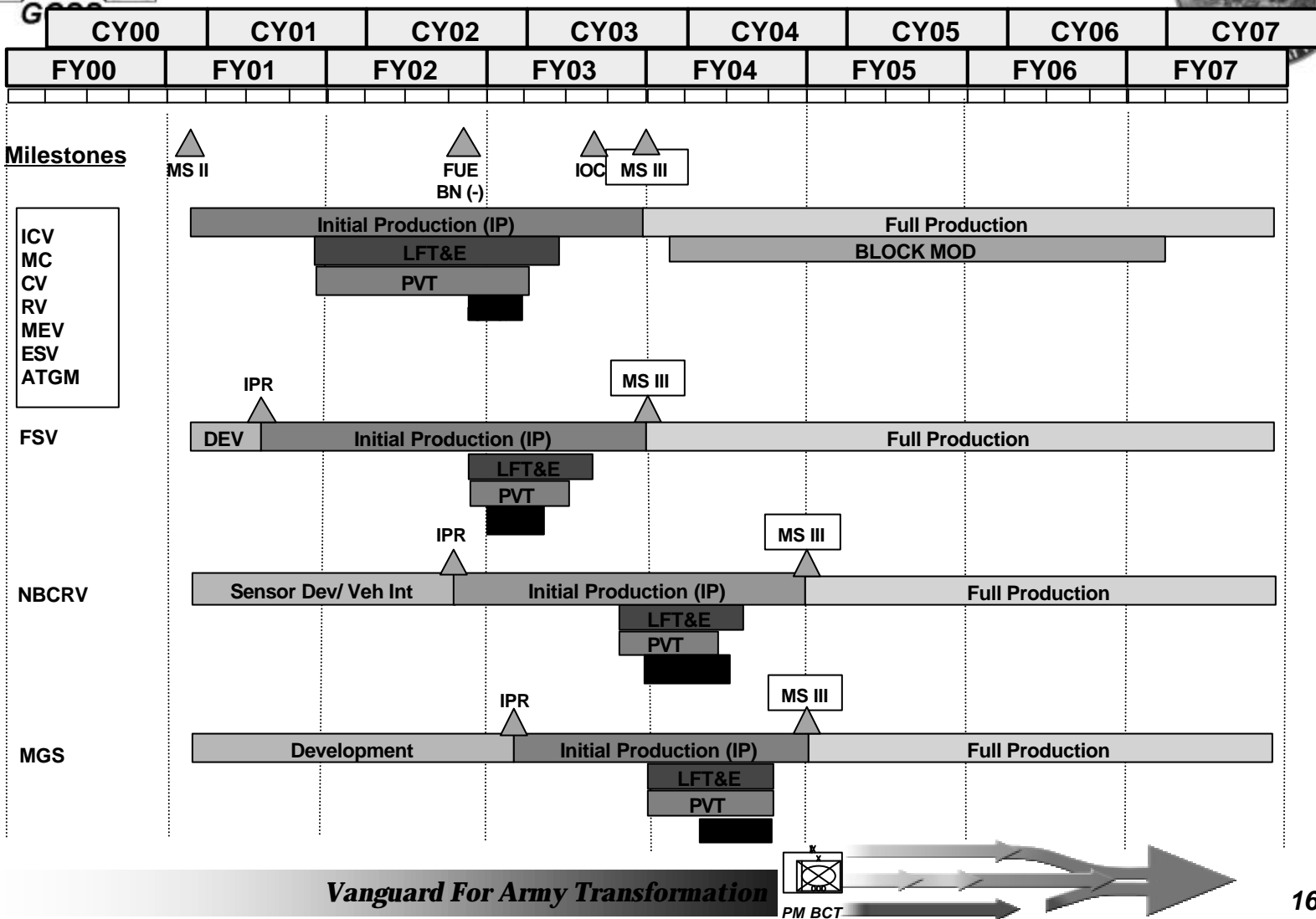


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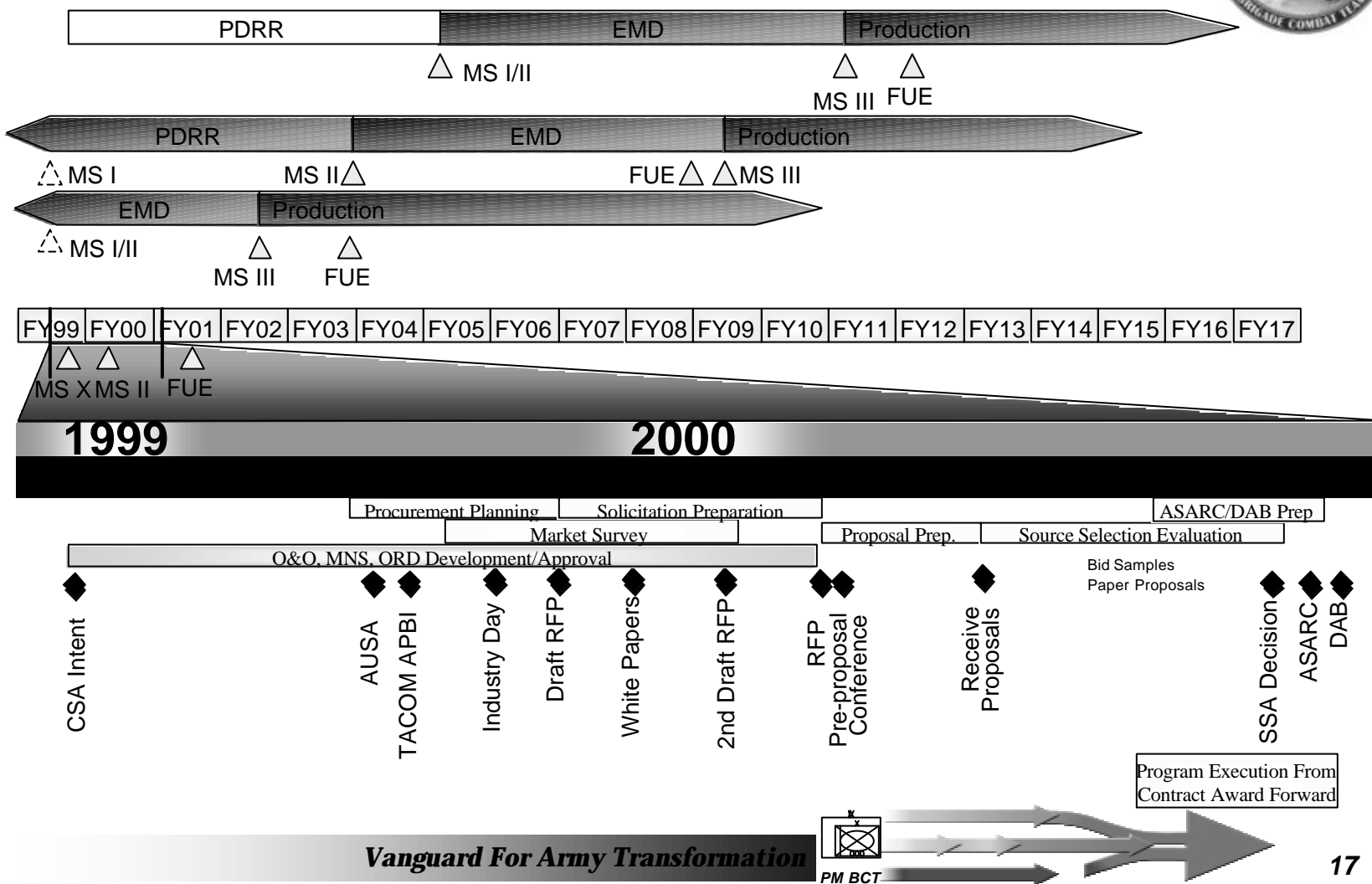


Integrated Program Summary



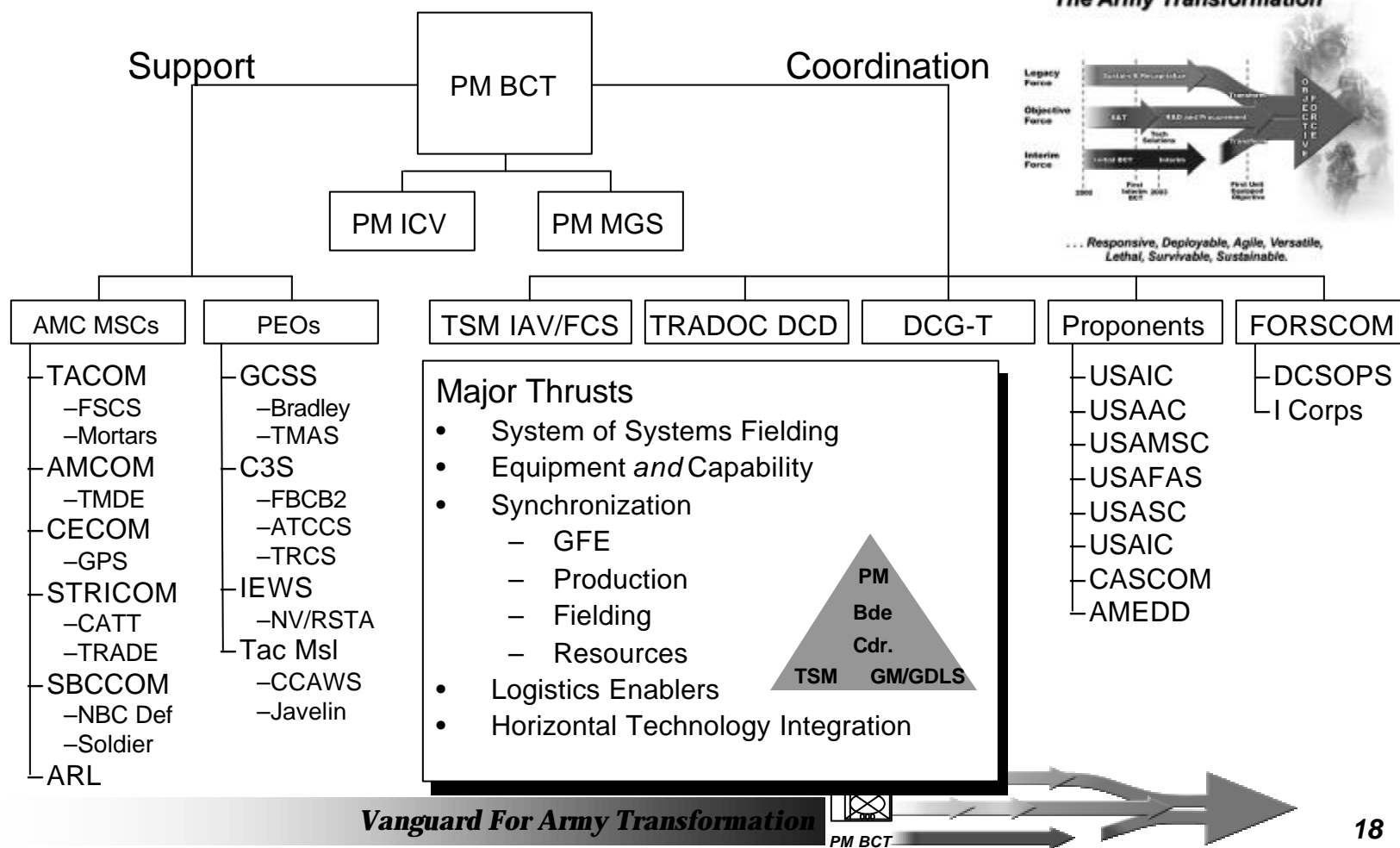


Cycle Time and OPTEMPO





Complexity in Execution



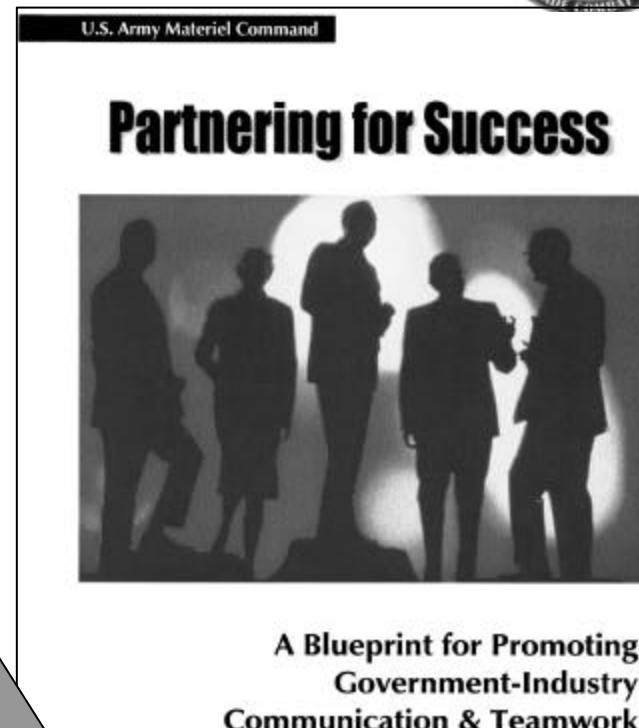


Program Leadership

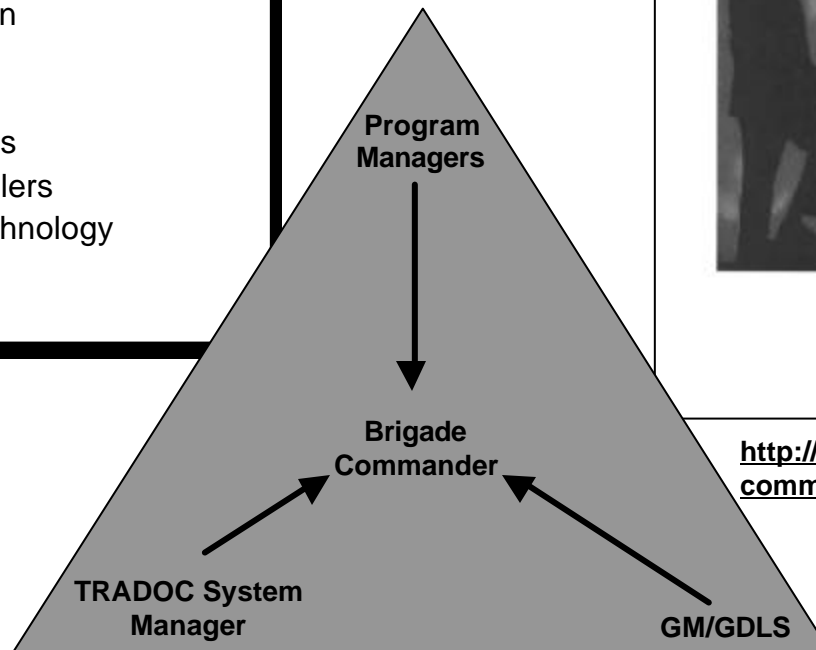


Major Thrusts in Execution

- Partnering for Success
- System of Systems Fielding
- Equipment *and* Capability
- Synchronization
 - Materiel
 - Production
 - Testing
 - Fielding
 - Resources
- Logistics Enablers
- Horizontal Technology Integration



http://www.amc.army.mil/amc/command_counsel/partnering.html



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PM BCT





What We're Acquiring



IAV Production

	Qty	Qty		
	Ea Bde	Ea ORF	TDA	Total
ICV	108	6	30	714
ATGM	9	1	15	75
Mortar	36	2	13	241
Recon	48	3	15	321
Fire Spt Veh	13	1	13	97
Engr Veh	9	1	12	72
Cdr's Veh	39	1	12	252
Med Evac	17	1	10	118
NBC Recon	3	1	13	37
MGS	27	4	18	204
Total	309	21		
	x 6	x 6		
Total	1854	126	151	2131

First and Subsequent Brigades

	1 st & 2 nd		3 rd - 6 th	
	Bde	ORF	Bde	ORF
ICV	108	6	108	6
ATGM	9	1	9	1
Mortar	36	2	36	2
Recon	48	3	48	3
Fire Spt Veh	13	1	13	1
Engr Veh	9	1	9	1
Cdr's Veh	27	1	39	1
Med Evac	16	1	17	1
NBC Recon	0	0	3	1
MGS	27	4	27	4
Total	293	20	309	21

- Engineering and Manufacturing Development.
- Training and Training Support.
- Fielding Support.
- Supply Support.
- Maintenance Support.

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Leverage Prior Investments on Off-the-Shelf Platforms



Infantry Carrier Vehicle (714)

- Primary Armament
- Squad of 9 (KPP)

Anti-Tank Guided Missile Vehicle (75)

- Tank Killer
- IBAS/ITAS
- TOW II

Medical Evacuation

Vehicle (118)

- Emergency Care Enroute
- Carry 4 Litter Patients

Engineer Squad Vehicle (72)

- Obstacle Neutralization
- Mine Detection
- Function as ICV

Interim Armored Vehicle (2131)

- Off-the-Shelf
- Commonality
- Logistics
- Interoperable with ABCS (KPP)
- C-130 Transportable (KPP)

Fire Support Vehicle (97)

- Striker

NBC Reconnaissance Vehicle (37)

- NBCRS Sensor Suite

Mobile Gun System (204)

- Infantry Support
- Bunker Buster (KPP)
- Limited AT Role

Reconnaissance Vehicle (321)

- Incorporate LRAS3
- Squad of 4

Mortar Carrier Vehicle (241)

- 120 mm
- 81 mm
- 60 mm

Commander's Vehicle (252)

- Continuous C & C
- Common Relevant Operating Picture

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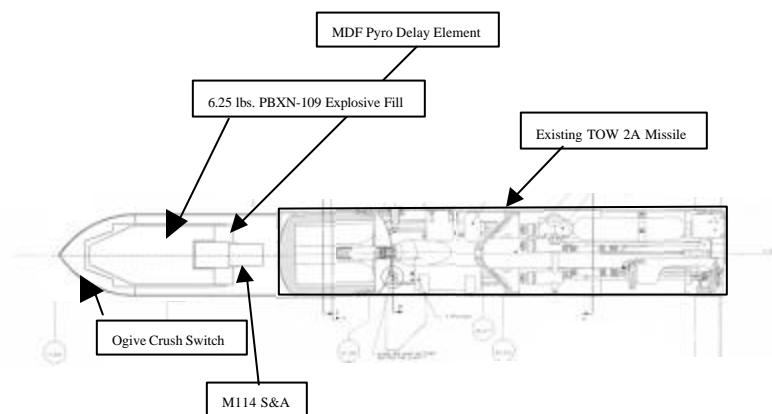




TOW Bunker Buster Concept



Overview



Technical Approach

- Develop Fragmenting HE Bulk Charge Warhead Leveraging Hellfire Blast-Frag Effort.
- Use Existing Mechanical Safe & Arm Device.
- Retrofit Existing TOW 2A Missiles.
- Use Existing Flight Algorithms.

Risks

- Pyrotechnic Delay Design & Packaging.
- Maintaining Minimum Safe & Arm Distance.

Developmental Concept

- Joint Government / Contractor Development Effort.
- PRIMEX (Hi-Tech) would Load PBXN 109 at Camden, AR (Existing T&M Contract).
- RDEC / RTTC Integrates Warhead Assembly.
- Raytheon Conducts Modeling & Simulation Efforts Via Existing Engineering Services Contract.
- 50 Missiles for Qualification Testing.
- 50 Missiles Available for Other Testing.

500 Missile Retrofit Concept

- Government Fabrication and Assembly.
 - Hi-Tech Loads PBXN 109.
 - AMRDEC Fabricates Warhead Assembly.
- Warhead Retrofit at Anniston Munitions Center (MIPR).
 - 500 Completed Missiles to be Delivered to Anniston Munitions Center for Contingency Storage.
 - Missiles Issued at DCOPS Direction to Support Contingency Operations.





IAV Ammo Requirements



- 7.62 Millimeter Machine Gun.
- .50 Caliber Machine Gun.
- 60 Millimeter Mortar.
- 81 Millimeter Mortar.
- 120 Millimeter Mortar.
- 40 Millimeter Grenades (MK-19).
- L8A1 66 Millimeter Smoke Grenades (M-6).
- 105 Millimeter MGS Main Gun.
- TOW IIB.





MGS 105mm Ammo Assessment Plan Phase 1



- Phase 1. Plan:
 - (Background - M456A1/A2 HEAT-T is suitable for issue to MGS developmental use without further testing. Tests in last 10 years - 1997 ASRP, 1993 ODS/Lab, 1993 ASRP, 1992 ODS/ASRP, 1991 ODS. M900, APFSDS-T, tested in 1995 plus ongoing routine ASRP (ballistics) in FY01).

- Tests:

Item	Detailed Visual Inspections	Ballistics	Bullet-pull/ Internal insp	Prop. Stability
M393A2 HEP-T	X	X	X	X
M467 TP-T	X	X		X
M490A1 TP-T	X	X		X
M724A1 TPDS-T	X	X		X
M393A1 TP-T	X	X		X



MGS 105mm Ammo Assessment Plan Phase 2



- Phase 2. Plan:
 - Questions to be answered:
 - Will items survive first 10yrs of MSG storage/deployment (until 2015)?
 - Is an item a good candidate for LCCM/Technology insertion to increase effectiveness?
 - Identify weak links/life limiting components.
 - Do items have an “upload” time limit?
 - Proposed Methods:
 - M456A1/A2, M393, M900 back in normal OSC ASRP program.
 - In-depth Predictive/weak link testing on M456A1/A2.
 - Ballistic, Lab, Predictive testing on M393, M494, M900.
 - Note: Additional testing (post Phase 1) of Training/TP rounds not foreseen.



ATGM TOW Training Ammo

(From DA PAM 350-38 Dated 3 Jul 97**)



	Per Vehicle*	IBCT Total*
• M80 Blast SIM	740	6,660
• ATWESS	70	6,30
• TOW Missile	1	9
• Smoke (Red Phos)	40	360

*Totals include rounds for two gunneries per year.

**STRAC Information was taken from the TOW/HMMWV/ITV table.





60mm Mortar Training Ammo

(From DA PAM 350-38 Dated 3 Jul 97)



	Per Vehicle*	IBCT Total*
• HE	162	2,916
• WP	18	324
• Illum	35	630
• SRTR	16	288
• Refurb Kit	224	4,032

*Totals include rounds for two gunneries per year.



81mm Mortar Training Ammo

(From DA PAM 350-38 Dated 3 Jul 97)



	Per Vehicle*	IBCT Total*
• HE	167	2,004
• WP	30	360
• Illum	25	300
• SRTR	31	372
• Refurb Kit	243	2,916

*Totals include rounds for two gunneries per year.



120mm Mortar Training Ammo

(From DA PAM 350-38 Dated 3 Jul 97)



	Per Vehicle*	IBCT Total*
• 120mm HE	11	396
• 120mm WP	22	792
• 120mm Illum	12	432
• 81mm HE	62	2,232
• 81mm WP	20	720
• 81mm Illum	18	648
• SRTR	27	972
• FRTR	62	2,232
• Refurb Kit	243	8,7448

*Totals include rounds for two gunneries per year.



M2 .50 Cal MG Training Ammo

(From DA PAM 350-38 Dated 3 Jul 97)



	Per Vehicle*	IBCT Total*
• Ball	262	31,702
• Mix	1244	150,524
• Blank	400	48,400

*Totals include rounds for two gunneries per year.

*Totals assume a 50/50 mix of M2 .50 Cals and MK19s on ICVs, MCs, RVs, FSVs, ESVs, CVs, and NBCRVs.

***TRADOC Is Currently Reviewing and Establishing
The Weapons System Mix.***

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MK19 MG Training Ammo

(From DA PAM 350-38 Dated 3 Jul 97)



	Per Vehicle*	IBCT Total*
• Dummy Rounds	10	1,210
• TP	400	48,400

*Totals include rounds for two gunneries per year.

*Totals assume a 50/50 mix of M2 .50 Cals and MK19s on ICVs, MCs, RVs, FSVs, ESVs, CVs, and NBCRVs.

***TRADOC Is Currently Reviewing and Establishing
The Weapons System Mix.***

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MGS Training Ammo



- Current M1/M1A1/M1A2 STRAC is not suitable for MGS units:
 - Vast differences in the organization and operational roles and concepts for M1/M1A1/M1A2s and MGSs.
 - M1/M1A1/M1A2 training focuses on tank on tank engagements with heavy reliance on KE rounds.
 - MGS training will focus on infantry support with heavy reliance on HEP rounds.
- The user community is currently developing MGS training tables and ammunition requirements.

The PMO Approach ...

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M6 Smoke Grenade Discharger



- 12 Launchers With 4 66mm Tubes Each.
- Provides:
 - 360° Obscuration.
 - Enhanced Survivability & Mobility.
- The user community is currently developing training strategies and ammunition requirements.

The PMO Approach ...

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